



DEVA

The revolutionary multimedia unit:
energetically self-sufficient, zero installation costs, solar power ready



USER GUIDE

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I Welcome

Congratulations on purchasing of the Powersoft DEVA.

DEVA is a lightweight and compact multifunctional device that implements bi-directional wireless communication, audio messaging and video capturing.

Once configured, DEVA is a self-sufficient device equipped with sensors – microphone, motion detector, temperature and pressure probes – and accessories (e.g. LED light, camera, etc.), enabling it to interact with the environment through the built in loudspeaker and audio/video capturing devices.

DEVA has been designed to be independent from any existing infrastructure. DEVA uses green technologies: its highly efficient design limits power consumption allowing uninterrupted use by exploiting the internal rechargeable battery; latest generation solar panels can quickly recharge the battery even in low light conditions.

DEVA's enclosure is weather-resistant (IP65), which makes it an ideal solution for outdoor

applications from background music to paging, in combination with video and/or audio surveillance.

DEVA provides bi-directional messaging and ambient control, it also allows configuration and monitoring via WiFi as well as wired Ethernet connections to tablets, PC and smartphones. Remote control is available via GSM/GPRS/UMTS.

DEVA is a self-sufficient fully configurable networking unit that can be installed anywhere!

Regulations and warnings

2 Warnings about using batteries

Use only batteries, chargers, and other accessories approved by Powersoft for use with this device. Batteries might cause damages like leaking, fire or explode when misused or defective. Take care in avoiding polarity mismatching when charging and discharging battery packs. Always double check the polarity of the battery's connector.

For safety reasons, batteries cannot be shipped when fully charged: charge the battery before using the DEVA.

Batteries (battery pack or batteries installed) shall not be exposed to excessive heat such as fire, or be placed in direct sunlight.

3 Warnings about Wi-Fi



This device contains WiFi Module

FCC ID: TFB-TIWI501

IC ID: 5969A-TIWI501

FCC statement

This equipment contains a WiFi module that has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try

to correct the interference by one or more of the following measures:

- ▶ Reorient or relocate the receiving antenna.
- ▶ Increase the separation between the equipment and receiver.
- ▶ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ▶ Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This equipment contains a device that complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment is restricted to indoor use when operated in the 5.15 to 5.25 GHz frequency range. The end-user is responsible to select a specific transmission channel in order to satisfy outdoor wireless equipment regulation requirements.

This device contains a device that is compliant with SAR for general population/uncontrolled exposure limits in ANSI/IEEE C95.1-1999 and had been tested in accordance with the measurement methods and procedures specified in OET Bulletin 65 Supplement C. This equipment should be installed and operated with minimum distance 20 cm between the radiator

and your body.

IC statement

This equipment contains a device that complies with RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions:

1. this device may not cause interference and
2. this device must accept any interference, including interference that may cause undesired operation of the device.

IC Radiation Exposure Statement

This equipment contains a device that complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

Note: the manufacturer is not responsible for any radio or tv interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

EU declaration

Powersoft hereby declares that the WiFi module contained in this/these product(s) is/are in compliance with the essential requirements and other relevant provisions of Directive 2006/95/EC, 1999/5/EC. This device is a 2.4 and 5 GHz wideband transmission system (transceiver), intended for use in all EU member states and EFTA countries, except in France and Italy where restrictive use applies.

In Italy the end-user should apply for a license at the national spectrum authorities in order to obtain authorization to use the device for setting up outdoor radio links and/or for supplying public access to telecommunications and/or network services.



This device may not be used for setting up outdoor radio links in France and in some areas where the RF output power may be limited to 10 mW EIRP in the frequency range of 2454 – 2483.5 MHz. For detailed

information the end user should contact the national spectrum authority in France.

This equipment contains a device that is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

Explosive device proximity warning – Do not operate a portable transmitter (such as a wireless network device) near unshielded blasting caps or in an explosive environment unless the device has been modified to be qualified for such use.

This device can be operated in the EU without restrictions indoor. The end-user is responsible to select a specific transmission channel in order to satisfy outdoor wireless regulation requirements.

This CE marking is valid for EU non-harmonized telecommunications products   R&TTE Directive (1999/5/EC) issued by the Commission of the European Community.

European representative:
Powersoft S.p.A.
via E. Conti, 5
50018 Scandicci (FI), Italy

- WARNING to prevent injury, this apparatus must be securely attached to the floor/wall in accordance with the installation instructions.

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4 Unpacking & checking

Your Powersoft product was completely tested and inspected prior to leaving the factory. Carefully inspect the shipping package before opening it, and then immediately inspect your new product. If you find any damage notify the shipping company immediately.

5 Disposal of the packing material

The transport and protective packing materials have been selected from sources that are environmentally friendly and suited for responsible disposal, and can normally be recycled.

Rather than just throwing these materials away, please ensure they are offered for reusing and recycling.

6 Versions

The DEVA's skin can be customized in many different colors, whilst the core can be chosen among three versions:

- ▶ DEVA HD – featuring high definition camera
- ▶ DEVA Audio – Audio only
- ▶ DEVA Passive – Speaker only

7 Package content

The main package contains:

- ▶ DEVA
- ▶ Connectors kit
 - ▷ Power supply plug:
Phoenix MCVW-1.5/ 2-STF-3.81
 - ▷ Loudspeaker plug:
Phoenix 1803578 MC 1,5/ 2-ST-3,81
 - ▷ RS-485 plug:
Phoenix 1817042 1840405 MC 1,5/ 6-ST-3,5
- ▶ Fastening sleigh (compatible to all mounting kit)
- ▶ Manual

7.1 Optional

- ▶ Pole and wall mounting kits
- ▶ Tripod mounting clamp
- ▶ Desk stand
- ▶ Solar panel (Circular and Rectangular)
- ▶ DEVA Passive
- ▶ UHF radio-microphone
- ▶ DC power supply and adapters
- ▶ Lithium battery
- ▶ Wireless Modem

	1 x 8" wide-range loudspeaker	Spot LED light	Infrared motion detector	Still picture resolution	Video resolution	Streaming video	auxiliary audio input	auxiliary power audio output	Wireless Modem	GPS module
DEVA HD	✓	✓	✓	1920x1080	1920x1080	✓	✓	✓	✓	✓
DEVA Audio	✓						✓	✓		✓
DEVA Passive	✓									

TABLE 1: DEVA versions main features comparison.

8 DEVA at a glance

DEVA is capable to perform tasks and react to events on the basis of a scheduled program and an event list. The interaction with the environment triggers a set of actions such as playing an audio file and streaming a video. In systems with more than one DEVA, scheduled actions can be synchronized either through the Deva System Manager (DSM) or through the Global Positioning System clock.

The **DEVA System Manager** web-app, installed in the **Powersoft DEVA Director** (PDD), allows you to perform on-fly actions:

- ▷ **Light** – switch the light on or off.
- ▷ **Stream live announcements** – from the PDD built in microphone or through the optional radio microphone.
- ▷ **Stream a web radio.**
- ▷ **Play message** – play a file in the default audio files list.
- ▷ **Play from Audio library** – play a file from the audio library.
- ▷ **Play playlist** – execute a playlist of audio files.
- ▷ **Play an FM radio.**
- ▷ **Take Photo** – shoot a single ambient photo or choose to shoot a number of pictures delayed by the selected time.
- ▷ **Stream video** – by means of the built in camera.

Refer to [Chapter “22 Actions and Players”](#) for detailed info.

Almost any of the previous actions can be scheduled in order to be executed at a given time.

Furthermore, DEVA can interact with the environment. A set of triggering events can be exploited to activate certain actions.

- ▶ **action triggers (events):**
 - ▷ **Motion detection**
 - ▷ **Battery charge**
 - ▷ **Network connectivity**
 - ▷ **Mechanical shocks**

Refer to [Chapter “23 Commanders and Triggers”](#) for detailed info.

When triggering events take place, DEVA can execute one or more of the following actions:

- ▷ **Light** – switch the light on or off.
- ▷ **Stream a web radio.**
- ▷ **Play message** – play a file in the default audio files list.
- ▷ **Play from Audio library** – play a file from the audio library.
- ▷ **Play playlist** – execute a playlist of audio files.
- ▷ **Play an FM radio.**
- ▷ **Take Photo** – shoot a single ambient photo
- ▷ **Stream video** – enable the built in camera.
- ▷ **Notify** – send an sms to a registered user.

Refer to [Chapter “23 Commanders and Triggers”](#) for detailed info.

9 Dashboard

The DEVA dashboard is located under the rear panel. It allows the user to access the main connections (i.e. solar panel, ethernet, etc), the power switch, and other features (refer to the next chapters for further details).

Refer to [FIGURE 1](#) to locate the following features on the dashboard.

1. Factory Default Setting push-button
[Chapter “25 DEVA reset”](#)
2. ON/OFF push-button
[Chapter “12 Start-up”](#)
3. Volume +/- push-button
[Chapter “16 USB MP3 playback”](#)
4. Seek track push-button
[Chapter “16 USB MP3 playback”](#)
5. Loudspeaker plug
[Chapter “28 DEVA passive”](#)
6. RS-485 and switch plug
7. USB connector
[Chapter “16 USB MP3 playback”](#)
8. 5.5 mm coaxial power supply plug ($16 V_{DC}$, $I A_{max}$)
9. Rear status LEDs – Red, Yellow, Green
[Chapter “20 Dashboard LEDs”](#)
10. Network activity LED
11. Ethernet port
12. SIM bay
[Chapter “11 SIM card assembly \(optional\)”](#)
13. Wi-Fi default setting selector
[Chapter “25 DEVA reset”](#)
14. 3.5 mm jack AUX input
15. Cable fastener
16. Phoenix MC 1,5/ 2-ST-3,81 solar panel connector
[Chapter “27 Solar panel”](#)
17. Testing connectors for servicing

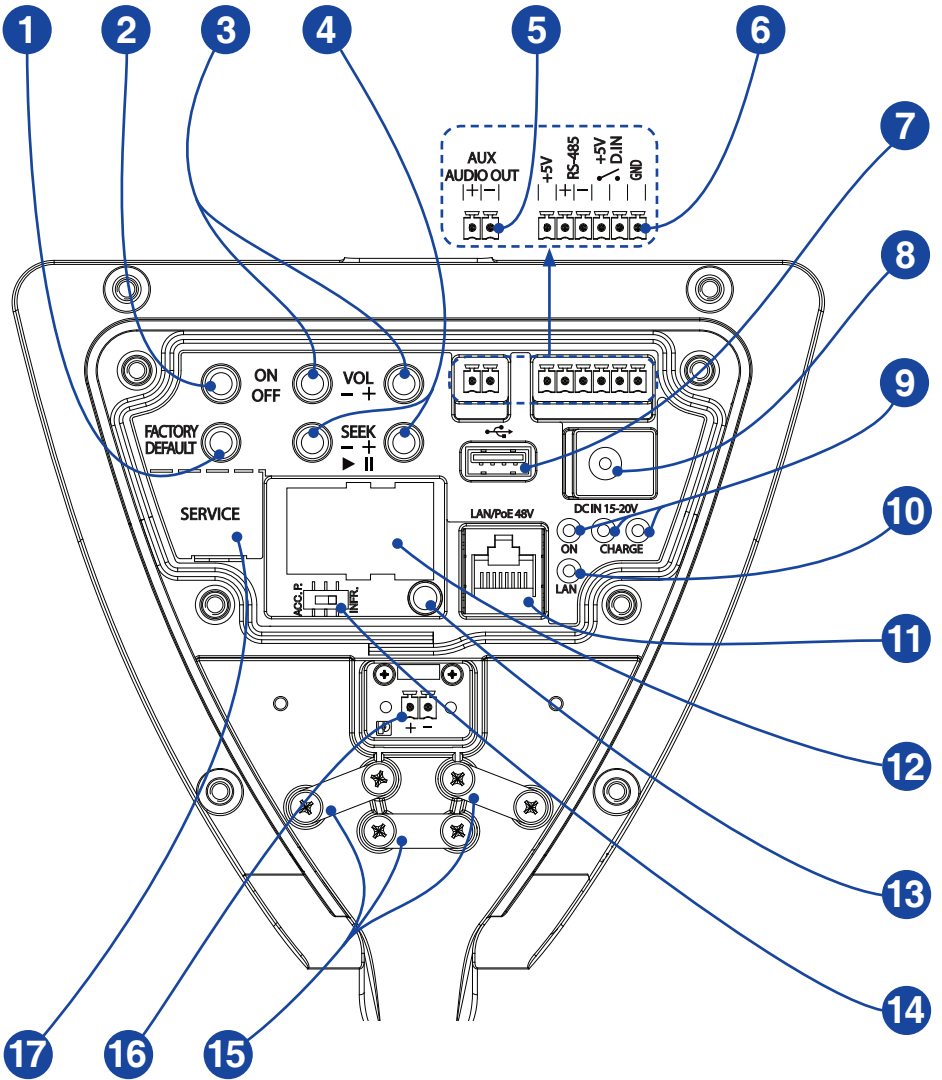


FIGURE 1: DEVA dashboard.

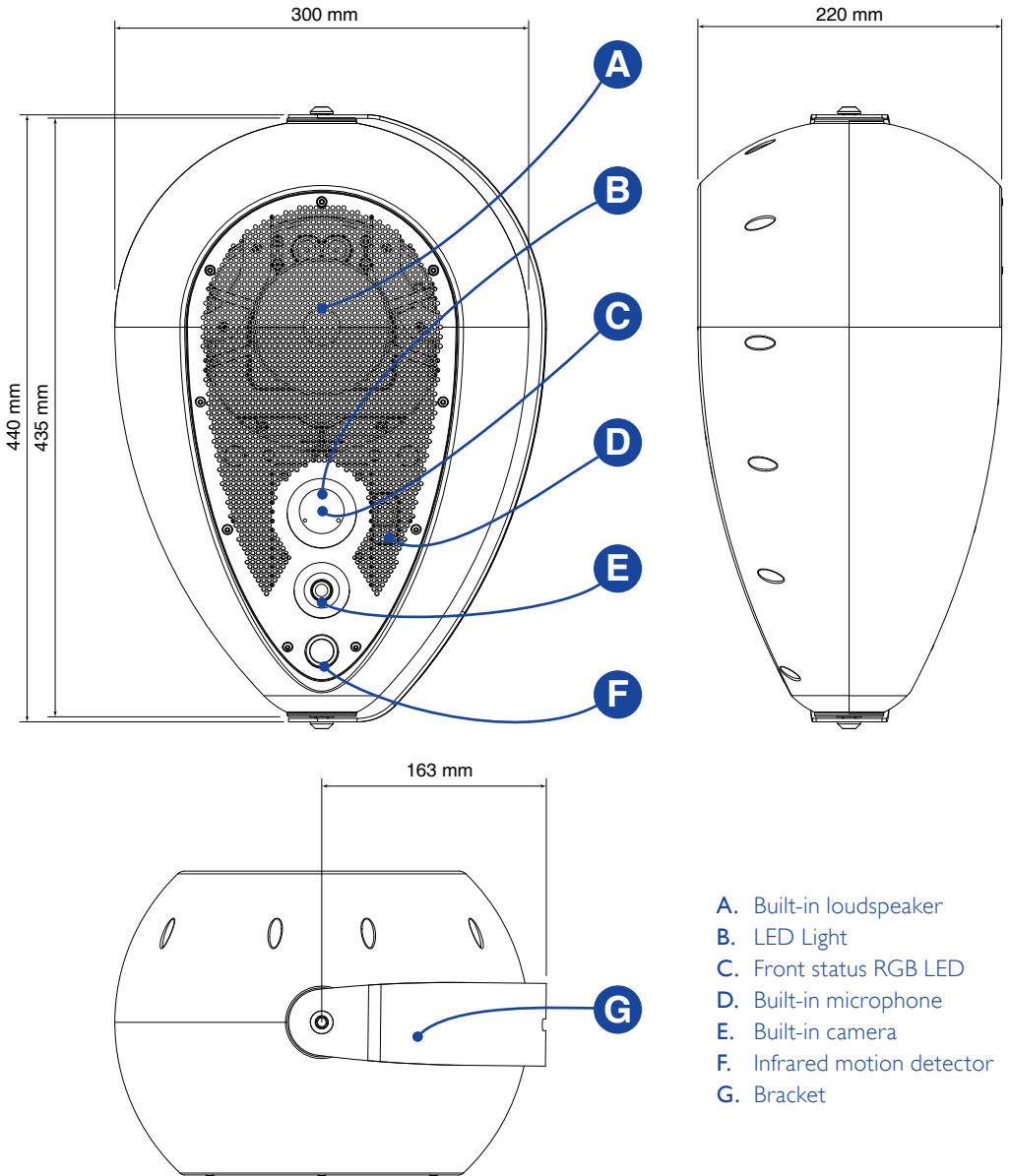


FIGURE 2: Mechanical drawing

Getting Started

10 Battery assembly

Prior to setting up the DEVA on site (ref. [Chapter "26 Mounting kits"](#)), we recommend to perform a preliminary setup of the device "on the desk".

The initialization phase involves the manual setup of the device. Once properly initialized and configured, DEVA is completely self-operating and remotely manageable.

The initialization workflow includes:

1. Battery assembly;
2. SIM assembly (optional);
3. start-up;
4. Initialization of the connections (networking);

We suggest to follow the instruction on this manual in order to properly setup the DEVA.

DEVA comes with a battery pack already installed into its battery compartment (ref. [FIGURE 3](#)). The battery pack must be properly connected before operating.

1. Open the battery compartment.
2. Verify that the battery presents no failures by probing with a multimeter. **If the portrayed value is <10.8 Vdc, please contact Powersoft's customer service. Sulfation occurs when a lead acid battery is deprived of a full charge.**
3. Plug the battery:
 - ▷ connect the **red + (positive)** faston to the battery's positive plug (beware the 4 A fuse);
 - ▷ connect the **black – (negative)** faston to the battery's negative plug.
4. Place the battery temperature probe far from the electric plugs, within the battery compartment.
5. Reposition the cover and screw the six hex screws tightly in place.

In order to ensure full operability, Powersoft recommends to fully charge the battery before starting the initialization procedure.

The battery charge can be achieved by means of either:

- ▶ an external power supply capable to deliver 20 V_{DC} and up to 3 A_{max} (e.g. solar panel, DC power supply unit, etc.) connected to the Phoenix MC 1,5/ 2-ST-3,81 (ref. [FIGURE I #16](#));
- ▶ a 18 V_{DC}, 1 A_{max} power supply plugged to the 5.5 mm coaxial plug (ref. [FIGURE I #8](#));
- ▶ a 48 V_{DC} PoE+ IEEE 802.3at Type2 via the Ethernet connection (ref. [FIGURE I #11](#)).

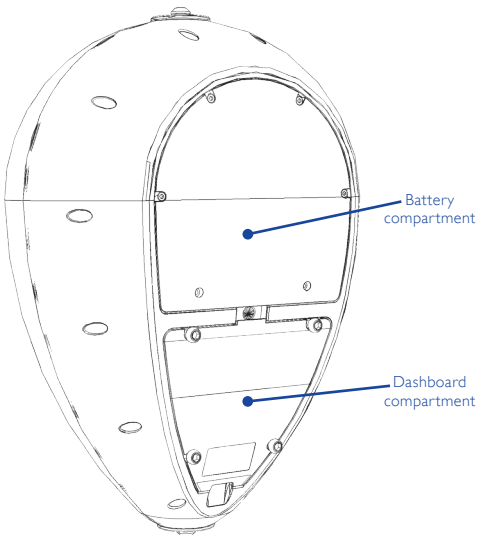


FIGURE 3: DEVA back view.

11 SIM card assembly (optional)

DEVA supports cellular communication protocols via a standard SIM – Subscriber Identity Module – card*.

DEVA works properly even without a SIM board, but sms notification and data connectivity via GPRS are disabled.

Follows these instructions in order to install the SIM card.

1. **Unlock the SIM by disabling the PIN request** during power up: this can be made easily by inserting the SIM into a mobile phone and disabling the PIN request.
2. Access the dashboard compartment and gently slide and tilt the SIM card tray (ref. [FIGURE 4](#)).
3. Insert the SIM card into the slot and reposition the tray.

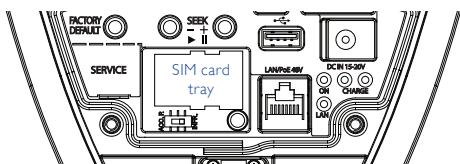


FIGURE 4: SIM card tray on dashboard.

The GPRS communication features must be activated and managed through the DEVA System Manager (refer to the DSM user guide).

* Not included in the package. Ask to your local IT providers.

12 Start-up

Once the battery has been properly installed, (ref. [Chapter "10 Battery assembly"](#)), DEVA can be switched on. **By default, DEVA starts-up when any external power supply (i.e. solar panel, DC power supply unit, PoE+ IEEE 802.3at Type 2) is plugged in.**

When the DEVA is connected to an external power supply, the system starts charging the internal battery: when the power supply delivers more than $12 V_{DC}$ the DEVA power up automatically.

In approximately 90 seconds the operating system completes the bootstrap procedure. During the bootstrap a long beep coming from the DEVA confirms that the system is booting.

When the front LED starts blinking (DEVA is looking for a Wi-Fi connection), the start-up procedure is complete.

12.1 DEVA start-up without external power supply

When no power supply is available and DEVA is off, you can switch it on by pressing of the ON/OFF button (ref. [FIGURE 5](#)).

1. Push on the ON/OFF button and keep it pressed until the green LED starts blinking (3 s approximately);
2. release the ON/OFF push button: the bootstrap procedure begins and a long beep is emitted.
3. once the startup is completed three audible double beeps will be played

Be aware that the start-up procedure without power supply will not take place if the battery charge is below $12 V_{DC}$.

13 Shut down

Usually you don't need to shut down the DEVA for maintenance: management can be performed by means of the DEVA System Manager.

1. Access the DEVA on site and remove the dashboard cover on the back of the DEVA (ref. [FIGURE 3](#)).

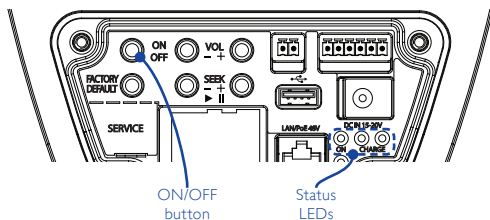


FIGURE 5: ON/OFF button and status LEDs on dashboard.

2. In order to completely shut down the DEVA we suggest to unplug any external power supply (e.g. solar panel).
3. On the DEVA dashboard, identify the On/Off push-button (ref. [FIGURE 5](#)) and keep it pressed until the three rear LEDs start blinking.
4. Release the On/Off push-button and wait until all the LEDs switch off (approximately one minute). The system will emit 2 short beep followed by a long beep to warn you about the shut down in progress.

14 Networking

DEVA can be set up as a stand alone device or integrated into any existing wired, wireless or mixed network. A proper network setup includes:

- ▶ **Powersoft DEVA Director – PDD.** The PDD is a personal computer that implements a custom GNU/Linux based operating system: the PDD provides a client-server environment that allows the user to easily manage a network of DEVA.

Both the DEVA and the PDD must be connected to the same network; this means that all devices have to be either hosted by the same Wi-Fi access point, or wired to the same Ethernet switch and sharing the same subnet and IP range.

- ▶ **DHCP server (often already implemented into routers and access point).** Both the DEVA and the PDD are set to dynamic IP addressing. The use of a DHCP server can be avoided by implementing an IP Static Addressing
- ▶ **Ethernet switching (often already implemented into routers and access point)** with a proper number of ports for wired connectivity;
- ▶ **Wi-Fi access point** for wireless connectivity;
- ▶ **One or more DEVA.**

In the following pictures we suggest some network topologies oriented to a domestic environment, where the router/AP implements both the DHCP server and the Ethernet switch.

14.1 DEVA in a wireless LAN

The DEVA are connected wirelessly to the access point; the PDD must use a wired connection to the access point. Any further client on the wireless network can manage the network of DEVA: in order for the client to manage a DEVA it must connect to the PDD's web based interface.



14.2 DEVA in a wired LAN

Both the DEVA and the PDD must be connected to the switch. The DHCP on board of the router assigns a unique IP address to each DEVA and PDD so they belong to the same subnet.

Through the DSM implemented in the PDD it is possible to manage the network of DEVA, set schedules and events, monitor the performance and launch an announcement on specified DEVA.

Refer to the DSM documentation for more information on how to configure the DEVA network parameters and the PDD in order to match your network environment.



15 Initialization

The initialization is performed by means of the PDD – Powersoft DEVA Director –, by connecting the DEVA to the local network through a wired or wireless connection.

You may need the following equipment:

- ▶ Powersoft DEVA Director – PDD;
- ▶ DHCP server or a router with DHCP capability;
- ▶ Ethernet switch with a proper number of ports for wired connectivity;
- ▶ Access point – AP – for wireless operating.

15.1 Initialization in a wireless LAN

By default DEVA tries to connect to a Wi-Fi network whose SSID is set to POWERSOFT.

In order to perform the initialization procedure we recommend to set your AP as follow.

1. Connect the PDD and the AP to the same LAN: ensure that they share the same IP range.
2. Log-in the PDD and launch the browser.
3. Point your browser to the IP address of the access point and enter its control panel.
4. **Modify the SSID of the Access Point to “POWERSOFT” and password “powersoft”.** Save and reboot the Access Point. While rebooting you will loose the connection: after some second, refresh the page on the browser and reconnect to the AP.
5. By default DEVA looks for the POWERSOFT Wi-Fi network. Through the AP control panel you should monitor all connected devices.

6. In the PDD, open the DEVA System Manager: on the browser address-bar write **http://localhost:8080**

7. Log in the DEVA System Manager: the administrator account has the following default credentials:

username: **admin**
password: **admin**

This is where the language can be set.

Once logged in, the DEVA System Manager shows the latest saved network configuration: since you are going to initialize your network, no DEVA is listed.

8. Click the button **Discovery** on the Toolbar: the DEVA System Manager will start seeking and connecting new devices on the network.

Now you can start using DEVA.

15.2 Initialization in a wired LAN

In order to perform the initialization procedure in a wired network environment, all devices have to be connected to a DHCP server (possibly through an Ethernet switch).

In order to receive unique IP addresses within the same subnet follow this simple procedure:

1. Connect the PDD and the DHCP server to the same network: ensure that they share the same IP range. The PDD must be set to use the DHCP server.
2. Connect each DEVA to the same network of your PDD and switch them on (ref. [Chapter “I2 Start-up”](#)).
3. Now follow the same procedure described in [Chapter “15.1 Initialization in a wireless LAN”](#) starting from point 6.

16 USB MP3 playback

The playback from the USB overrides any audio playing on the DEVA: in order to start the playback of the files from a USB device press simultaneously the SEEK+ and SEEK– (ref. [FIGURE I #4](#)) push buttons on the DEVA dashboard.

The actual scheduled action does not stop: while the USB audio content is playing, any scheduled playlist runs to the 30% of its preset volume.

In order to allow DEVA to reproduce the MP3 files from the USB, the audio files must be stored in the `AudioFiles` folder in the root of the USB storage device.

DEVA can only play MP3 files, no other file formats are allowed. Playback of the audio files is looped in alphabetical order. USB playback control is managed through the controls located on the DEVA dashboard:

PLAY/STOP

- ▷ press simultaneously the SEEK+ and SEEK– push buttons to toggle PLAY and STOP

VOLUME

- ▷ push once on VOL+ or VOL– buttons (ref. [FIGURE I #3](#)) for a 1% volume change
- ▷ push and keep pressed on VOL+ or VOL– buttons for a 5% volume change per second

TRACK SEEK

- ▷ press on the SEEK+ and SEEK– push buttons to skip track

Take care to properly stop the audio file playing from the USB before unplugging the USB device!

By unplugging the USB device without having properly stopped the playback may cause the USB to stop working until next system reboot.

17 AUX input

DEVA implements an auxiliary input, namely a secondary input that allows to stream audio through the DEVA built in loudspeaker:

The AUX input comprises a physical 3,5 mm jack stereo input on the rear panel (ref. [FIGURE I #13](#)). This input can be used to connect an UHF radio receiver (refer to [Chapter "29 UHF Microphone"](#)).

By factory default the AUX input is disabled. The DEVA System Manager provides the user interface to enable the AUX input and set the maximum output volume: please refer to the DSM documentation for further information.

The AUX input has priority on any other running player, i.e. if AUX is active, any other playback is muted.

17.1 AUX input activation via DEVA dashboard

When the DEVA dashboard is physically accessible, the AUX input can be toggled by pressing simultaneously the VOL+ and VOL– push buttons:

TOGGLE AUX INPUT

- ▷ press simultaneously the VOL+ and VOL– push buttons to toggle AUX input

VOLUME

- ▷ push once on VOL+ or VOL– buttons for a 1% volume change
- ▷ push and keep pressed on VOL+ or VOL– buttons for a 5% volume change per second




18 Playback via Bluetooth




DEVA implements a Bluetooth receiver that allows any Bluetooth device to connect and stream audio via the DEVA built in loudspeaker. Refer to the DSM documentation for further information.

19 Front RGB LED

The front LED is positioned in the center of the light (ref. [FIGURE 2](#)). The activity of the front LED is triggered by the motion detector: **the LED activates when the sensor reveals the movement of people in front of the DEVA.**

The color code refers to the battery state; the on/off state refers to the LAN (both wired and wireless) connectivity status.

connectivity status			
	RED	BLUE	GREEN
LAN CONNECTIVITY PRESENT	SOLID ON	SOLID ON	SOLID ON
NO LAN CONNECTIVITY	BLINKING	BLINKING	BLINKING

battery status	Color	
BATTERY CHARGE AT WARNING LEVEL (11.8V)		RED
NO CHARGING		BLUE
CHARGING		GREEN

During system update the LED turns purple and blinks until the end of the process.

SYSTEM UPDATING		PURPLE (blinking)
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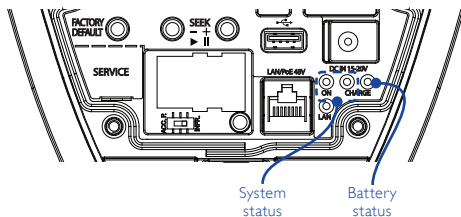





FIGURE 6: Status LEDs.

20 Dashboard LEDs

The status LEDs in the dashboard (ref. [FIGURE 6](#)) provide the following information:

battery status		
	RED	
CHARGING	SLOW BLINKING	
FULL CHARGE	SOLID ON	
NO BATTERY	OFF	
system status		
	YELLOW	GREEN
NO POWER SUPPLY	OFF	OFF
BOOTING	OFF	BLINKING
SYSTEM ON	OFF	SOLID ON
SYSTEM OFF CAUSED BY USER SHUTDOWN	SLOW BLINKING	OFF
SYSTEM OFF CAUSED BY LOW BATTERY CHARGE	BLINKING	OFF
SHUTTING DOWN	SOLID ON	DOUBLE BLINKING (Cycled)

21 Warning beeps

Many system functions are warned by acoustic signals (beeps). In the following table a dot • represents a short beep, a dash — represents a long beep.

system status	beeps combination
BUTTON PRESSED	•
SYSTEM BOOTING	—
REBOOT	• • •
STARTING SOFT RESET	• •
STARTING HARD RESET	• —
SHUTTING DOWN	— — —

22 Actions and Players

22.1 Actions

Depending on its version, DEVA performs a set of defined actions:

- ▶ play audio
- ▶ switch the light on/off
- ▶ take photo
- ▶ stream video
- ▶ record audio
- ▶ play the radio (fm/web)
- ▶ reproduce live streaming
- ▶ notify with a message (sms/email)

22.2 Players

DEVA provides four audio players that manage respectively:

1. live stream of audio
2. playback of single audio file
3. playback FM radio
4. playlist of audio files

The four players can be active at the same time, but only two of them will play simultaneously, according to their priority:

live stream > single file > FM radio > playlist
HIGH PRIORITY > LOW PRIORITY

The four audio players are layered on the basis of the playback priority:

- ▶ the playback of a live streaming (either an audio file or from the microphone) has priority on the playback of an audio file from the library;
- ▶ the playback of a single audio file has priority on the playback of the FM radio;
- ▶ the playback of an FM radio has priority on the playback of a playlist.

The player with the lower priority plays in the background (i.e. lower in volume) when a high priority player starts playing.

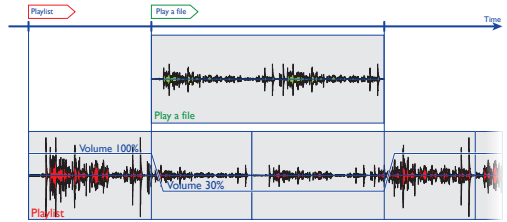


FIGURE 7: The playback of a single audio file has the priority on a playlist: the volume of the playlist is lowered by 70% and the playback does not stop.

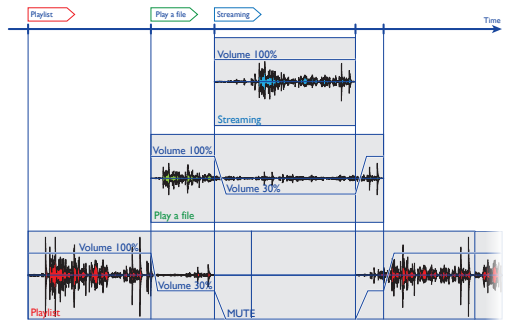


FIGURE 8: DEVA can reproduce up to two fluxes of audio simultaneously: in this example the playback of the playlist is muted whilst also playing the audio file and the live streaming.

NOTE: The default behavior can be overridden by changing the volume level during the playback. Each player provides independent volume control. The playback volume of each player is a fraction (expressed in percentage) of the master volume.

23 Commanders and Triggers

23.1 Commanders

DEVA receives commands to perform actions. Commanders access a subset of actions.

23.1.1 Live execution

The DEVA System Manager provides direct access to all actions on DEVA; through the DSM you can:

- ▷ Play audio
 - stream an announcement/audio file/web radio
 - play a predefined message
 - execute a playlist
 - play an FM radio
- ▷ Stream from AUX input
- ▷ Switch the light
- ▷ Mute audio playback
- ▷ Take a photo
- ▷ Camera controls

23.1.2 Time schedule

The DSM provides a tool to set the executions of actions on a time schedule. Available actions are:

- ▷ Play audio
 - play a predefined message
 - execute a playlist
 - playback a single audio file
 - playback an FM/web radio
- ▷ Switch the light
- ▷ Record audio
- ▷ Take photo
- ▷ Camera control

23.1.3 Events

Ambient events can be used to activate some actions:

- ▷ Play audio
 - play a default message
- ▷ Switch the light
- ▷ Record audio
- ▷ Take photo
- ▷ Notify with an sms
- ▷ Camera control

23.1.4 USB key

DEVA can start playing audio files from any USB storage device, such as a USB key, plugged into the USB port on the DEVA dashboard.

Refer to [Chapter "16 USB MP3 playback"](#).

23.2 Triggers

Triggers are conditions that activate functions of the DEVA. The tool Events uses triggers.

Events/conditions that trigger DEVA actions can be chosen among:

- ▷ the signal from the motion detector
- ▷ internal battery voltage (threshold: 11.8V)
- ▷ Wi-Fi and LAN network connectivity
- ▷ mechanical shocks
- ▷ external switch

When a triggering condition takes place, DEVA performs the programmed action.

Triggers are filtered by time: you can set the time interval during which the triggering conditions are taken into account.

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Reset and reboot

Very rarely you may need to restart the DEVA. Most of the problems related to schedules and event management can be solved through the DEVA System Manager.

DEVA provides reboot and reset procedures: the reboot procedure is meant to be useful during firmware update and can be launched from the DEVA System Manager; the reset must be activated on the DEVA on site.

24 DEVA reboot

Refer to the DSM documentation for the reboot procedure.

When the DEVA reboots its internal operating system all settings (e.g. name, IP, etc.), schedules (e.g. playlists), events and data (e.g. audio files) are saved and restored after rebooting.

On the System of the DSM view you will see that the DEVA loses the connection with the PDD while booting, and hooks again at the end of the process.

25 DEVA reset

DEVA implements two reset procedures: soft- and hard-reset. The soft-reset restores the device to the factory network preset; the hard-reset brings the DEVA to its factory configuration by restoring the factory firmware and the factory network preset.

Both reset procedures preserve the data stored into the DEVA. At the end of the reset procedure the DEVA loses the connection with the PDD and must be initialized (refer to [Chapter “15 Initialization”](#)).

25.1 Soft-reset

1. Access the DEVA on site.
2. Set the Wi-Fi default setting selector located on the DEVA dashboard to Infrastructure (default) or Access Point mode (ref. [FIGURE 9 A](#)).
3. Press the **Factory Default Setting** push-button and keep it pressed until the DEVA plays two beeps.
4. Release the Factory Default Setting push-button and wait until the reboot procedure is over.

During the bootstrap procedure the DEVA emits a weak high frequency tone, indicating that the operating system is booting.

The soft-reset procedure lasts approximately in one minute. At the end of the soft-reset the DEVA's network settings are restored to factory default: In order to access the DEVA you have to follow the initialization procedure as described in [Chapter “15 Initialization”](#).

25.2 Hard-reset

1. Access the DEVA on site.
2. Set the Wi-Fi default setting selector located on the DEVA dashboard to Infrastructure (default) or Access Point mode (ref. [FIGURE 9 A](#)).
3. At the same time press the **Factory Default Setting** (ref. [FIGURE 9 B](#)) push-button and the **Seek-** (ref. [FIGURE 9 C](#)) push-button: keep them both pressed until the DEVA plays two beeps, the second longer than the first.

4. Release the push-buttons and wait until the reboot procedure is over.

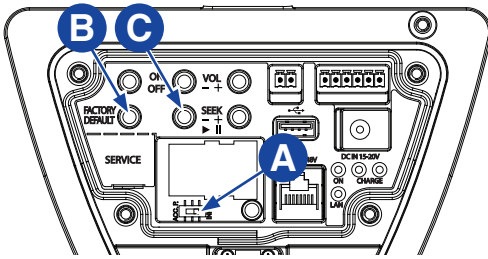


FIGURE 9: DEVA dashboard.

During the bootstrap procedure the DEVA emits a weak high frequency tone, indicating that the operating system is booting.

The hard-reset procedure will end when all systems are ready and lasts approximately one minute. At the end of the hard-reset the DEVA's network settings and firmware are restored to their factory default: in order to access the DEVA you have to follow the initialization procedure as described in [Chapter "15 Initialization"](#).

	Default FIRMWARE	Default NETWORK CONFIGURATION
SOFT RESET		✓
HARD RESET	✓	✓

TABLE 2: Reset comparison.

Accessories

26 Mounting kits

DEVA is meant to be self sufficient: after the initialization and configuration procedures, DEVA can be installed on site and remotely managed.

DEVA is equipped with a bracket suiting a set of optional poles and wall mounting kits.

During the first installation, loosen the top and bottom screws connecting the DEVA to the bracket slightly.

Once installed, remember to tighten these screws in order to secure the DEVA in the desired position.

26.1 Needed tools

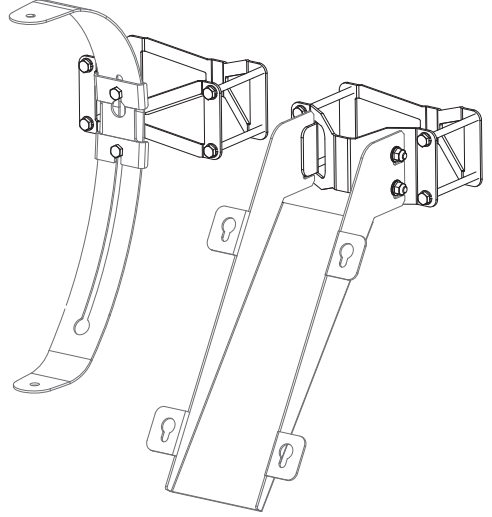
- ▶ 13 mm metric wrench
- ▶ 3 mm hexagonal key (Allen key)
- ▶ 6 mm hexagonal key (Allen key)

26.2 Pole and wall mounting kits

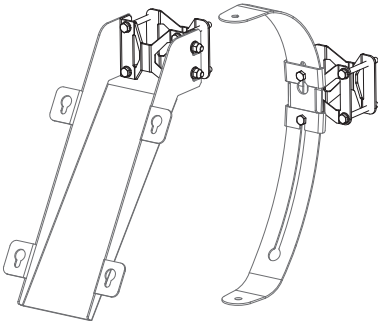
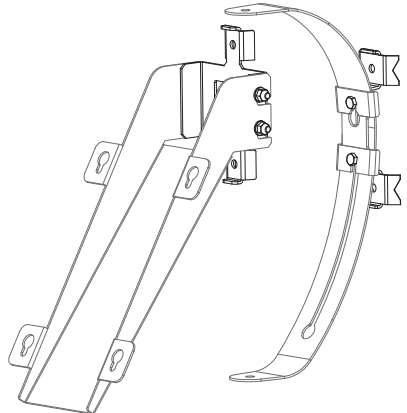
The DEVA and the solar panel can be hanged on poles, trees and walls by means of the optional mounting kits; three types of mounting kits are provided:

- ▶ DEVA and solar panel pole mounting kits for 40-85 mm pole diameter (1 1/2" - 3 1/3" diameter).

- ▶ DEVA and solar panel pole mounting kits for 85-150 mm pole diameter (3 1/3" - 6" in diameter).



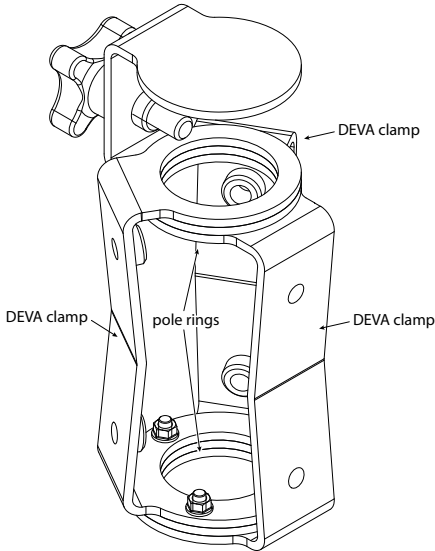
- ▶ DEVA and solar panel brackets for pole mounting with bands and buckles.



26.3 Tripod mounting clamp

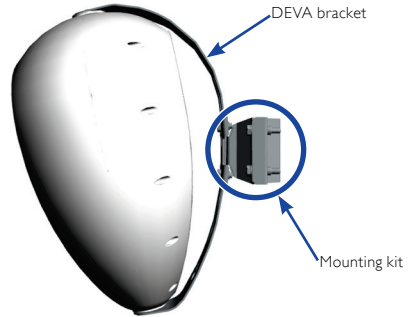
Powersoft provides an optional clamp suitable to \varnothing 35 mm (1.34 inch) tripods or pole stands.

The tripod mounting clamp fits up to three DEVA spaced 120° apart.



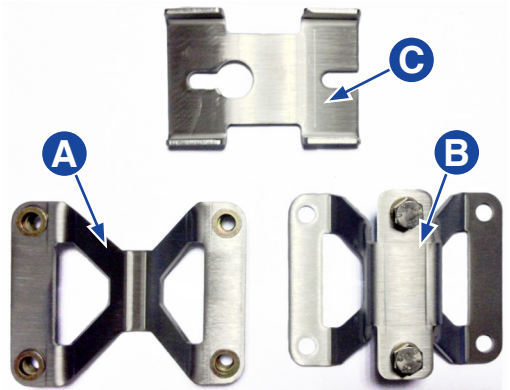
26.4 Mounting instructions

The kits differ according to the kind of mounting surface, but the clamping system that holds the DEVA on place is common to all. In this section the clamping procedure is described.



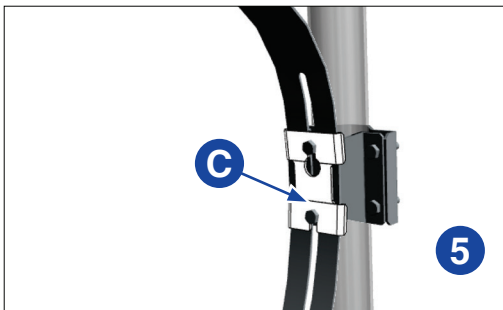
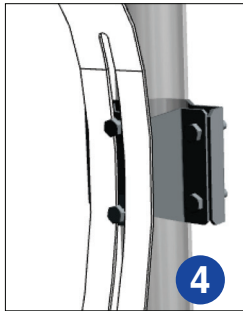
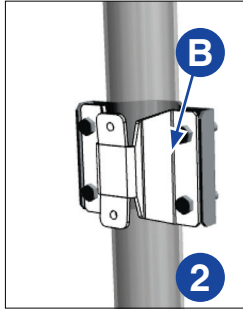
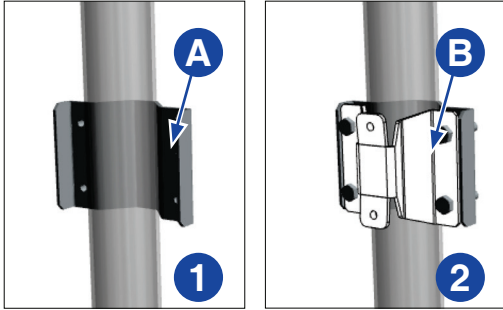
All the clamps fit the DEVA bracket. They are usually composed by:

- A. mounting clamp (only in pole mounting kits)
- B. fastening clamp
- C. fastening sleigh (in the DEVA package)



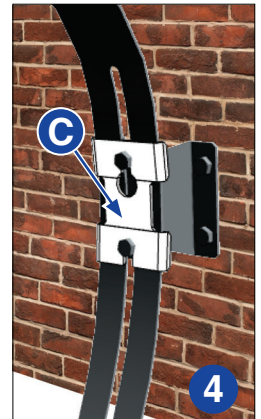
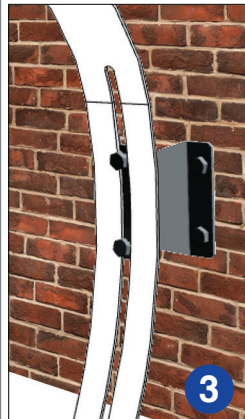
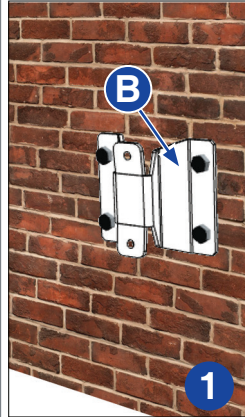
26.4.1 Pole mounting kit assembly

1. Position the mounting clamp (A);
2. Secure the fastening clamp (B);
3. Insert the bolts in the fastening clamp, leaving them loose;
4. Position the DEVA bracket on the fastening clamp exploiting the eyelets at the bottom of the bracket;
5. Fasten the sleigh in place.



26.4.2 Wall mounting kit assembly

1. Fix the fastening clamp (B) to the wall;
2. Insert the bolts in the fastening clamp, leaving them loose;
3. Position the DEVA bracket on the fastening clamp exploiting the eyelets at the bottom of the bracket;
4. Fasten the sleigh in place.



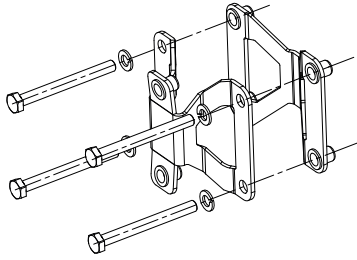


FIGURE 11: 40-85 mm pole diameter mounting kit.

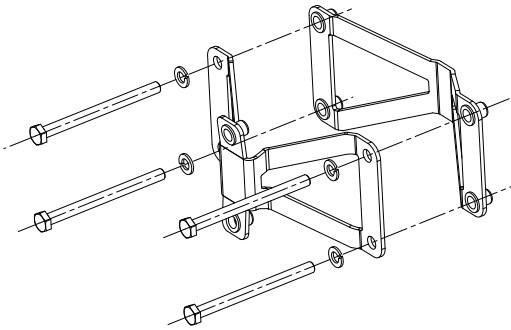


FIGURE 12: 85-150 mm pole diameter mounting kit.

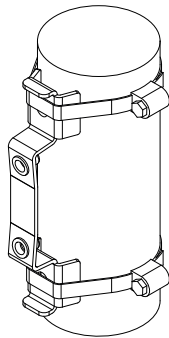


FIGURE 13: Bands and buckles mounting kit.

27 Solar panel

DEVA is certified to work with 35 W or 50 W, 18 V external solar panels, and this is the best choice for making DEVA really self sufficient.

27.1 Plugging the solar panel

1. On the rear of the solar panel, open the connectors box and identify the positive and negative terminals:
 - ▷ Identify the positive and negative terminals. In the following picture (ref. [FIGURE 10](#)), the positive plug is the left hand one, the negative plug is the right hand one. The central plug inside the solar panel's connectors box is not connected.

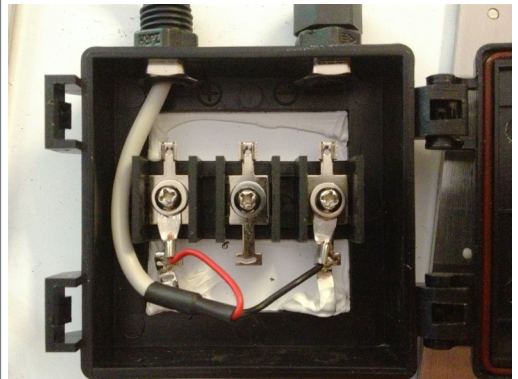


FIGURE 10: Solar panel's connectors box.

2. Unscrew the plastic fastening ring of one conduit of the box.
3. Insert the bipolar AWG24 wire with the fork terminals inside the fastening ring and then through the conduit.
4. Slightly loose the terminals' screws.
5. Connect the wire's forks to the plugs taking

care to match the polarity and screw the terminals.

6. Fasten the bipolar wire: tightly screw the plastic ring on the conduit. Take care to leave it slightly loose the wire inside the box.
7. Close the box.
8. Fasten the solar panel to its clamp. Take care to leave the wire slightly loose (ref. [FIGURE 14](#)).



FIGURE 14: Leave the solar panel's wire slightly loose.

9. The opposite side of the bipolar AWG24 wire is terminated with a Phoenix plug: insert the plug into the Phoenix MC 1,5/ 2-ST-3,81 DEVA's connector taking care to match the polarity: looking at the connector, the positive terminal is the left hand one (ref. [FIGURE 15](#)).
10. Fasten the wire to the DEVA and secure the dashboard compartment.

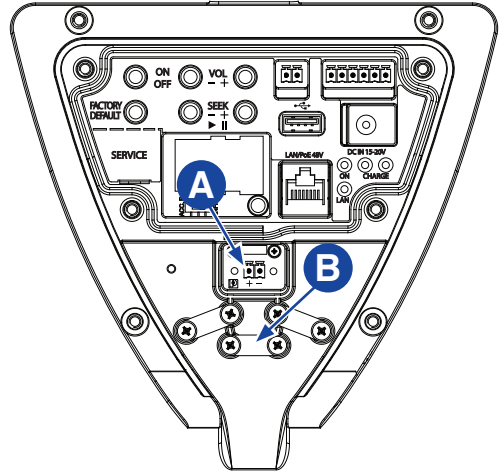


FIGURE 15: DEVA dashboard: A) Solar panel Phoenix connector; B) wire fastener.

28 DEVA passive

DEVA implements a two channel high efficiency audio power amplifier whose channel 1 is wired to the built-in loudspeaker. The audio power out of channel 2 (ref. [FIGURE 16](#)) can be activated through the DEVA System Manager in order to drive a DEVA Passive, that provides a 2 Ω nominal impedance loudspeaker on a DEVA shaped cabinet.

The DEVA Passive can not play independently because it does not implement the audio power amplifier and the core system for remote management.

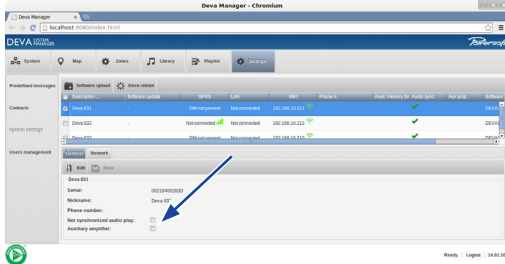


FIGURE 16: Activate the auxiliary amplifier on the system settings page.

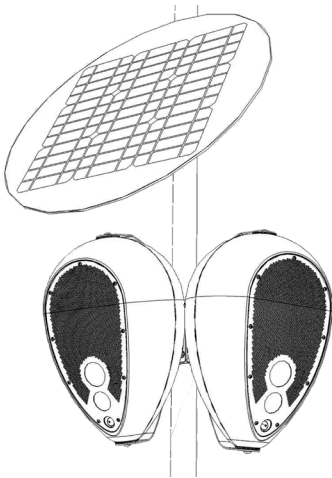


FIGURE 17: The DEVA passive loudspeaker is driven by the auxiliary amplifier of the DEVA.

29 UHF Microphone

DEVA can be equipped with an auxiliary UHF receiver that can be used to connect an optional radio-microphone.

The UHF channel uses the AUX connection with the 3.5mm jack connector in the rear panel: when the AUX input is activated from the PDD, the auxiliary input is activated.

In order to activate the AUX input:

1. select the DEVA equipped with the receiver in the main window;
2. click on the AUX input button in the toolbar.

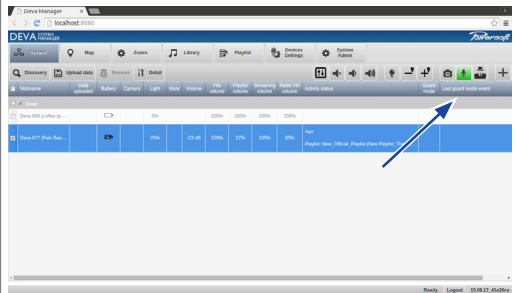
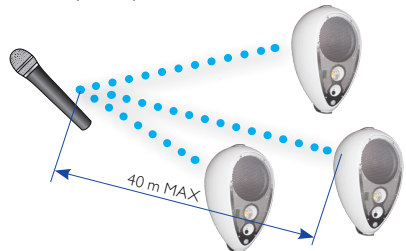


FIGURE 18: Activate the auxiliary input on selected DEVA.

Once the AUX input is active, the Activity Status cell shows the label AUX: any other player is muted (the AUX input has the higher priority).

One DEVA can connect only one radio-microphone at a time. Multiple DEVA can be connected to the same radio-microphone. Annoying interference will occur if more than one radio-microphone is active in range of the UHF connectivity of the DEVA.

The range of UHF connectivity of the DEVA is about 40 m (130 ft).



Specifications

Audio	
Sources	Streaming from remote microphone Playback from internal SD card Playback from USB key FM receiver
Interface module	1 x 8" wide-range loudspeaker
Frequency response	100 Hz - 16 kHz \pm 3dB
Max sound pressure level	115 dB SPL @ 1 m
Amplifier	Highly efficient Powersoft Class D circuitry
Memory	4 GB Solid state
Upstream	Via integrated microphone

Power Management	
Power supply options	35 - 50 W / 18 V External solar panel PoE+ IEEE 802.at Type 2 via RJ45 port 18V 10W External power supply
Internal battery	Standard sealed battery 12Ah 12V
Min. light for solar charging	50 W/m ² , AM1.5
Max sound pressure level	115 dB SPL @ 1 m
Operating times (without recharging)	Stand-by: more than 14 days. Audio: approx. 64 hours. Light approx. 20 hours

Auxiliary Interfaces	
Input / Output	1 x auxiliary audio input 1 x auxiliary power audio output 1 x RS485 1 x general purpose digital input

Graphic User Interface	
Web Browser	Web Browser On-board web server for mobile clients via Wi-Fi connection
Sensors	
Presence alarm	Infrared motion detector
Telemetry	Infrared motion detector

Lighting	
Spot light	High-power 4000°K white LED, appr. 540 lm, appr. 35° coverage, dimmable

Photo & Video – AVL version	
Camera resolution	752 x 576 pixels
Camera aperture	60°
Video resolution	320 x 240 pixels 1 fps

Photo & Video – HD version	
Video resolution	FULL HD (1920x1080) 2Mpx
Streaming video	real-time H264 video compression ONVIF compatible RTSP - Real Time Streaming Protocol compatible

Communication	
Wireless	Standard IEEE 802.11 a,b,g,n,d, 2.4 and 5 GHz
WiFi security	64-bit WEP 256-bit WPA, 256-bit WPA2 PSK
Wired	Ethernet 100 Mbit/s, USB 2.0, via internal port
Long range connection	GSM/GPRS module

Construction	
Casing	Lightweight weather-resistant IP65, plastic case from -20° to +70 °C (-4° / +158° F)
Dimensions	L x W x H 300 x 220 x 440 mm 11.81 x 8.66 x 17.32 in
Weight	10 kg / 22 lb



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